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1: J Immunol 1995 Dec 1;155(11):5280-8

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Mouse lymphotoxin-beta receptor. Molecular genetics, ligand binding, and expression.

Force WR, Walter BN, Hession C, Tizard R, Kozak CA, Browning JL, Ware CF.

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Lymphotoxin (LT) -alpha beta heterotrimer is a membrane-anchored ligand expressed by activated T cells which binds specifically to the LT beta receptor (LT beta R), a member of the TNFR family. The LT beta R is implicated as a critical element in controlling lymph node development and cellular immune reactions. To address this hypothesis we have isolated a mouse cDNA encoding a single transmembrane protein of 415 amino acids with 76% identity to human LT beta R. The receptor function of this molecule was demonstrated by the ability of the extracellular domain, constructed as a chimera with the Fc region of IgG7, to bind to LT alpha beta complexes expressed on the surface of activated T cells or insect cells infected with baculoviruses containing LT alpha and LT beta cDNAs. The gene encoding mouse LT beta R, Ltbl, contains 10 exons spanning 6.9 kb and maps to mouse chromosome 6, which is closely linked to Tnfr1, consistent with the tight linkage of the human homologue of these genes on chromosome 12p13. Mouse LT beta R mRNA is expressed by cell lines of monocytic and epithelial origin but not by a CTL line, and *in vivo* it is constitutively expressed in visceral and lymphoid tissues. The delineation of the structure of the mouse LT beta R will aid investigations into the role of this cytokine-receptor system in immune function and development.

PMID: 7594541 [PubMed - indexed for MEDLINE]

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